

10/568033

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SEQUENCE LISTING

<110> LOCOMOGENE, INC.

<120> THERAPEUTIC PREPARATION FOR HEMATOPOIETIC DISEASE

<130> BHP-A0301P

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<150> US 60/495,001

<151> 2003-08-13

<160> 4

<170> PatentIn Ver. 2.0

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<213> Homo sapiens

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Met Phe Arg Thr

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Ala Val Met Met Ala Ala Ser Leu Ala Leu Thr Gly Ala Val Val Ala

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His Ala Tyr Tyr Leu Lys His Gln Phe Tyr Pro Thr Val Val Tyr Leu

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Thr Lys Ser Ser Pro Ser Met Ala Val Leu Tyr Ile Gln Ala Phe Val

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ctt gtc ttc ctt ctg ggc aag gtg atg ggc aag gtg ttc ttt ggg caa 606

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gtc aca gag act tgt ctg gcc ttc acc gtt ttt cgg gat gac ttc agc 702

Val Thr Glu Thr Cys Leu Ala Phe Thr Val Phe Arg Asp Asp Phe Ser

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Pro Arg Phe Val Ala Leu Phe Thr Leu Leu Leu Phe Leu Lys Cys Phe

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cac tgg ctg gct gag gac cgt gtg gac ttt atg gaa cgc agc ccc aac 798

His Trp Leu Ala Glu Asp Arg Val Asp Phe Met Glu Arg Ser Pro Asn

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atc tcc tgg ctc ttt cac tgc cgc att gtc tct ctt atg ttc ctc ctg 846

Ile Ser Trp Leu Phe His Cys Arg Ile Val Ser Leu Met Phe Leu Leu

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Gly Ile Leu Asp Phe Leu Phe Val Ser His Ala Tyr His Ser Ile Leu			
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ctg atg acg atg gtg ctc acc atc ttc atc aag tat gtg ctg cac tcc 990			
Leu Met Thr Met Val Leu Thr Ile Phe Ile Lys Tyr Val Leu His Ser			
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gtg gac ctc cag agt gag aac ccc tgg gac aac aag gct gtg tac atg 1038			
Val Asp Leu Gln Ser Glu Asn Pro Trp Asp Asn Lys Ala Val Tyr Met			
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ctc tac aca gag ctg ttt aca ggc ttc atc aag gtt ctg ctg tac atg 1086			
Leu Tyr Thr Glu Leu Phe Thr Gly Phe Ile Lys Val Leu Leu Tyr Met			
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gcc ttc atg acc atc atg atc aag gtg cac acc ttc cca ctc ttt gcc 1134			
Ala Phe Met Thr Ile Met Ile Lys Val His Thr Phe Pro Leu Phe Ala			
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Ile Arg Pro Met Tyr Leu Ala Met Arg Gln Phe Lys Lys Ala Val Thr
245 250 255 260

gat gcc atc atg tct cgc cga gcc atc cgc aac atg aac acc ctg tat 1230
Asp Ala Ile Met Ser Arg Arg Ala Ile Arg Asn Met Asn Thr Leu Tyr
265 270 275

cca gat gcc acc cca gag gag ctc cag gca atg gac aat gtc tgc atc 1278
Pro Asp Ala Thr Pro Glu Glu Leu Gln Ala Met Asp Asn Val Cys Ile
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His Ile Phe His Thr Ser Cys Leu Arg Ser Trp Phe Gln Arg Gln Gln
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Gln Ser Pro Pro Pro Pro Glu Pro Ala Asp Gln Gly Pro Pro Pro Ala

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Pro His Pro Pro Pro Leu Leu Pro Gln Pro Pro Asn Phe Pro Gln Gly			
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Leu Leu Pro Pro Phe Pro Pro Gly Met Phe Pro Leu Trp Pro Pro Met			
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Gly Pro Phe Pro Pro Val Pro Pro Pro Pro Ser Ser Gly Glu Ala Val			
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Ala Pro Pro Ser Thr Ser Ala Ala Ala Leu Ser Arg Pro Ser Gly Ala			
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gct aca acc aca gct gct ggc acc agt gct act gct gct tct gcc aca			1710
Ala Thr Thr Thr Ala Ala Gly Thr Ser Ala Thr Ala Ala Ser Ala Thr			
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Ala Ser Gly Pro Gly Ser Gly Ser Ala Pro Glu Ala Gly Pro Ala Pro			
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Gly Phe Pro Phe Pro Pro Pro Trp Met Gly Met Pro Leu Pro Pro Pro

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Ser Pro Val Ala His

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Val Val Tyr Leu Thr Lys Ser Ser Pro Ser Met Ala Val Leu Tyr Ile

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Gln Ala Phe Val Leu Val Phe Leu Leu Gly Lys Val Met Gly Lys Val

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Phe Phe Gly Gln Leu Arg Ala Ala Glu Met Glu His Leu Leu Glu Arg

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Ser Trp Tyr Ala Val Thr Glu Thr Cys Leu Ala Phe Thr Val Phe Arg

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Asp Asp Phe Ser Pro Arg Phe Val Ala Leu Phe Thr Leu Leu Leu Phe

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Leu Lys Cys Phe His Trp Leu Ala Glu Asp Arg Val Asp Phe Met Glu

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Arg Ser Pro Asn Ile Ser Trp Leu Phe His Cys Arg Ile Val Ser Leu

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Met Phe Leu Leu Gly Ile Leu Asp Phe Leu Phe Val Ser His Ala Tyr

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His Ser Ile Leu Thr Arg Gly Ala Ser Val Gln Leu Val Phe Gly Phe

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Glu Tyr Ala Ile Leu Met Thr Met Val Leu Thr Ile Phe Ile Lys Tyr

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Val Leu His Ser Val Asp Leu Gln Ser Glu Asn Pro Trp Asp Asn Lys

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Ala Val Tyr Met Leu Tyr Thr Glu Leu Phe Thr Gly Phe Ile Lys Val

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Leu Leu Tyr Met Ala Phe Met Thr Ile Met Ile Lys Val His Thr Phe
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Pro Leu Phe Ala Ile Arg Pro Met Tyr Leu Ala Met Arg Gln Phe Lys
245 250 255

Lys Ala Val Thr Asp Ala Ile Met Ser Arg Arg Ala Ile Arg Asn Met
260 265 270

Asn Thr Leu Tyr Pro Asp Ala Thr Pro Glu Glu Leu Gln Ala Met Asp
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Leu Pro Cys Asn His Ile Phe His Thr Ser Cys Leu Arg Ser Trp Phe
305 310 315 320

Gln Arg Gln Gln Thr Cys Pro Thr Cys Arg Met Asp Val Leu Arg Ala
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Phe Pro Gln Gly Leu Leu Pro Pro Phe Pro Pro Gly Met Phe Pro Leu

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Trp Pro Pro Met Gly Pro Phe Pro Pro Val Pro Pro Pro Pro Ser Ser

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Gly Glu Ala Val Ala Pro Pro Ser Thr Ser Ala Ala Ala Leu Ser Arg

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Pro Ser Gly Ala Ala Thr Thr Thr Ala Ala Gly Thr Ser Ala Thr Ala

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Ala Ser Ala Thr Ala Ser Gly Pro Gly Ser Gly Ser Ala Pro Glu Ala

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Gly Pro Ala Pro Gly Phe Pro Phe Pro Pro Pro Trp Met Gly Met Pro

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Leu Pro Pro Pro Phe Ala Phe Pro Pro Met Pro Val Pro Pro Ala Gly

465

470

475

480

Phe Ala Gly Leu Thr Pro Glu Glu Leu Arg Ala Leu Glu Gly His Glu

485

490

495

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Arg Gln His Leu Glu Ala Arg Leu Gln Ser Leu Arg Asn Ile His Thr

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510

Leu Leu Asp Ala Ala Met Leu Gln Ile Asn Gln Tyr Leu Thr Val Leu

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Ala Ser Leu Gly Pro Pro Arg Pro Ala Thr Ser Val Asn Ser Thr Glu

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Gly Thr Ala Thr Thr Val Val Ala Ala Ala Ser Ser Thr Ser Ile Pro

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Ser Ser Glu Ala Thr Thr Pro Thr Pro Gly Ala Ser Pro Pro Ala Pro

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Glu Met Glu Arg Pro Pro Ala Pro Glu Ser Val Gly Thr Glu Glu Met

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Val Val Tyr Leu Thr Lys Ser Ser Pro Ser Met Ala Val Leu Tyr Ile

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Gln Ala Phe Val Leu Val Phe Leu Leu Gly Lys Val Met Gly Lys Val

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 Phe Phe Gly Gln Leu Arg Ala Ala Glu Met Glu His Leu Leu Glu Arg
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tcc tgg tac gcc gtc aca gag act tgt ctg gcc ttc acc gtt ttt cgg 347
 Ser Trp Tyr Ala Val Thr Glu Thr Cys Leu Ala Phe Thr Val Phe Arg
 85 90 95

gat gac ttc agc ccc cgc ttt gtt gca ctc ttc act ctt ctt ctc ttc 395
 Asp Asp Phe Ser Pro Arg Phe Val Ala Leu Phe Thr Leu Leu Leu Phe
 100 105 110

ctc aaa tgt ttc cac tgg ctg gct gag gac cgt gtg gac ttt atg gaa 443
 Leu Lys Cys Phe His Trp Leu Ala Glu Asp Arg Val Asp Phe Met Glu
 115 120 125

cgc agc ccc aac atc tcc tgg ctc ttt cac tgc cgc att gtc tct ctt 491
 Arg Ser Pro Asn Ile Ser Trp Leu Phe His Cys Arg Ile Val Ser Leu
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atg ttc ctc ctg ggc atc ctg gac ttc ctc ttc gtc agc cac gcc tat 539
 Met Phe Leu Leu Gly Ile Leu Asp Phe Leu Phe Val Ser His Ala Tyr
 145 150 155 160

cac agc atc ctg acc cgt ggg gcc tct gtg cag ctg gtg ttt ggc ttt 587

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His Ser Ile Leu Thr Arg Gly Ala Ser Val Gln Leu Val Phe Gly Phe
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gag tat gcc atc ctg atg acg atg gtg ctc acc atc ttc atc aag tat 635
Glu Tyr Ala Ile Leu Met Thr Met Val Leu Thr Ile Phe Ile Lys Tyr
180 185 190

gtg ctg cac tcc gtg gac ctc cag agt gag aac ccc tgg gac aac aag 683
Val Leu His Ser Val Asp Leu Gln Ser Glu Asn Pro Trp Asp Asn Lys
195 200 205

gct gtg tac atg ctc tac aca gag ctg ttt aca ggc ttc atc aag gtt 731
Ala Val Tyr Met Leu Tyr Thr Glu Leu Phe Thr Gly Phe Ile Lys Val
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ctg ctg tac atg gcc ttc atg acc atc atg atc aag gtg cac acc ttc 779
Leu Leu Tyr Met Ala Phe Met Thr Ile Met Ile Lys Val His Thr Phe
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Pro Leu Phe Ala Ile Arg Pro Met Tyr Leu Ala Met Arg Gln Phe Lys
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aaa gct gtg aca gat gcc atc atg tct cgc cga gcc atc cgc aac atg 875
Lys Ala Val Thr Asp Ala Ile Met Ser Arg Arg Ala Ile Arg Asn Met
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Asn Thr Leu Tyr Pro Asp Ala Thr Pro Glu Glu Leu Gln Ala Met Asp

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Gln Arg Gln Gln Thr Cys Pro Thr Cys Arg Met Asp Val Leu Arg Ala

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 Trp Pro Pro Met Gly Pro Phe Pro Pro Val Pro Pro Pro Pro Ser Ser
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Ala Gly Leu Thr Pro Glu Glu Leu Arg Ala Leu Glu Gly His Glu Arg

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Gln His Leu Glu Ala Arg Leu Gln Ser Leu Arg Asn Ile His Thr Leu

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Met Glu Arg Pro Pro Ala Pro Glu Ser Val Gly Thr Glu Glu Met Pro

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Glu Asp Gly Glu Pro Asp Ala Ala Glu Leu Arg Arg Arg Arg Leu Gln

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Lys Leu Glu Ser Pro Val Ala His

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Gln Ala Phe Val Leu Val Phe Leu Leu Gly Lys Val Met Gly Lys Val

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Phe Phe Gly Gln Leu Arg Ala Ala Glu Met Glu His Leu Leu Glu Arg

65 70 75 80

Ser Trp Tyr Ala Val Thr Glu Thr Cys Leu Ala Phe Thr Val Phe Arg

85 90 95

Asp Asp Phe Ser Pro Arg Phe Val Ala Leu Phe Thr Leu Leu Leu Phe

100 105 110

Leu Lys Cys Phe His Trp Leu Ala Glu Asp Arg Val Asp Phe Met Glu

115	120	125	
Arg Ser Pro Asn Ile Ser Trp Leu Phe His Cys Arg Ile Val Ser Leu			
130	135	140	
Met Phe Leu Leu Gly Ile Leu Asp Phe Leu Phe Val Ser His Ala Tyr			
145	150	155	160
His Ser Ile Leu Thr Arg Gly Ala Ser Val Gln Leu Val Phe Gly Phe			
	165	170	175
Glu Tyr Ala Ile Leu Met Thr Met Val Leu Thr Ile Phe Ile Lys Tyr			
	180	185	190
Val Leu His Ser Val Asp Leu Gln Ser Glu Asn Pro Trp Asp Asn Lys			
	195	200	205
Ala Val Tyr Met Leu Tyr Thr Glu Leu Phe Thr Gly Phe Ile Lys Val			
	210	215	220
Leu Leu Tyr Met Ala Phe Met Thr Ile Met Ile Lys Val His Thr Phe			
225	230	235	240
Pro Leu Phe Ala Ile Arg Pro Met Tyr Leu Ala Met Arg Gln Phe Lys			
	245	250	255

25/27

Lys Ala Val Thr Asp Ala Ile Met Ser Arg Arg Ala Ile Arg Asn Met

260

265

270

Asn Thr Leu Tyr Pro Asp Ala Thr Pro Glu Glu Leu Gln Ala Met Asp

275

280

285

Asn Val Cys Ile Ile Cys Arg Glu Glu Met Val Thr Gly Ala Lys Arg

290

295

300

Leu Pro Cys Asn His Ile Phe His Thr Ser Cys Leu Arg Ser Trp Phe

305

310

315

320

Gln Arg Gln Gln Thr Cys Pro Thr Cys Arg Met Asp Val Leu Arg Ala

325

330

335

Ser Leu Pro Ala Gln Ser Pro Pro Pro Pro Glu Pro Ala Asp Gln Gly

340

345

350

Pro Pro Pro Ala Pro His Pro Pro Pro Leu Leu Pro Gln Pro Pro Asn

355

360

365

Phe Pro Gln Gly Leu Leu Pro Pro Phe Pro Pro Gly Met Phe Pro Leu

370

375

380

Trp Pro Pro Met Gly Pro Phe Pro Pro Val Pro Pro Pro Pro Ser Ser

385

390

395

400

Gly Glu Ala Val Ala Pro Pro Ser Thr Ser Ala Ala Leu Ser Arg Pro

405

410

415

Ser Gly Ala Ala Thr Thr Thr Ala Ala Gly Thr Ser Ala Thr Ala Ala

420

425

430

Ser Ala Thr Ala Ser Gly Pro Gly Ser Gly Ser Ala Pro Glu Ala Gly

435

440

445

Pro Ala Pro Gly Phe Pro Phe Pro Pro Pro Trp Met Gly Met Pro Leu

450

455

460

Pro Pro Pro Phe Ala Phe Pro Pro Met Pro Val Pro Pro Ala Gly Phe

465

470

475

480

Ala Gly Leu Thr Pro Glu Glu Leu Arg Ala Leu Glu Gly His Glu Arg

485

490

495

Gln His Leu Glu Ala Arg Leu Gln Ser Leu Arg Asn Ile His Thr Leu

500

505

510

Leu Asp Ala Ala Met Leu Gln Ile Asn Gln Tyr Leu Thr Val Leu Ala

515

520

525

Ser Leu Gly Pro Pro Arg Pro Ala Thr Ser Val Asn Ser Thr Glu Gly

530

535

540

Thr Ala Thr Thr Val Val Ala Ala Ala Ser Ser Thr Ser Ile Pro Ser

545

550

555

560

Ser Glu Ala Thr Thr Pro Thr Pro Gly Ala Ser Pro Pro Ala Pro Glu

565

570

575

Met Glu Arg Pro Pro Ala Pro Glu Ser Val Gly Thr Glu Glu Met Pro

580

585

590

Glu Asp Gly Glu Pro Asp Ala Ala Glu Leu Arg Arg Arg Arg Leu Gln

595

600

605

Lys Leu Glu Ser Pro Val Ala His

610

615